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PHOTOGRAPHIC
INTERPRETATION
REPORT

NATIONAL PHOTOGRAPHIC
INTERPRETATION CENTER

SUBMARINE ASSEMBLY AND LAUNCHING EQUIPMENT AT HU-LU-TAO NAVAL BASE, SHIPYARD, AND PORT FACILITY, CHINA

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INSTALLATION OR ACTIVITY NAME		COUNTRY
Submarine Assembly and Launching Equipment at Hu-lu-tao Naval Base, Shipyard, and Port Facility		CH
UTM COORDINATES	GEOGRAPHIC COORDINATES	
NA	40-42-51N 120-59-45E	

MAP REFERENCE

15th RTS. USATC, Series 200, Sheet 0289-24, scale 1:200,000

LATEST IMAGERY USED	NEGATION DATE (If required)
	NA

ABSTRACT

1. This report describes and graphically depicts the submarine launching and assembly equipment and jigs (see paragraphs 7-9) which have been observed at Hu-lu-tao Naval Base, Shipyard, and Port Facility This equipment provides some indication of the size, shape, and possible type of submarine under construction in the shipyard.

2. The report is based on photography and contains a location map, photographs, and perspectives.

INTRODUCTION

3. Hu-lu-tao Shipyard (Figure 1), although still under construction, has produced an R-class SS, the Han SSU, and is presently constructing unidentified submarines. The submarines are assembled, unobserved, in the covered construction hall, making the analysis of construction programs very difficult. Indications of the size, shape, and possible type of submarine under construction can be derived from the jigs and the assembly launching equipment observed at the yard. The width of the jigs and the length of the launch carriage assembly are the approximate width and length of the submarine under construction.

BASIC DESCRIPTION

4. Submarines are assembled in the construction hall at Hu-lu-tao Shipyard (Figure 2). The completed vessel must then be moved several hundred feet from the construction hall to the launch platform for launching. The method and equipment used in moving the submarine from the construction hall to the launch platform and the launching sequence are described and defined below.

Equipment Definitions

5. Items of equipment are as follows:

a. Support frame - a heavy gauge object that supports the keel blocks on which the submarine is assembled (Figures 3 and 4).

b. Keel block - substantial blocks, probably wood, which are placed in line with the keel and supported by the support frame. They are adjusted to provide uniform support for the submarine (Figure 3).

c. Cradle - the keel block and the support frame combined (Figure 3). The submarine is assembled and transported on the cradles.

d. Truck - a swiveling frame, with two pairs of wheels, probably hydraulically jacked up, for heavy lifting and movement of the submarine (Figures 3 and 5).

e. Longitudinal support beams - the beams which join the trucks to form the launch carriage assembly (Figures 3 and 5).

f. Launch carriage assembly - a group of trucks, probably hydraulic, which are joined by the longitudinal support beams. It is used to lift and move the submarine while it is on the cradle (Figures 3 and 6). The length of the assembly will be approximately 92 percent of the submarine's length.

g. Launch basin - a two-level graving dock used to launch ships (Figure 2).

h. Launch platform - a floating platform which supports the vessels for launching (Figure 2).

Launch Sequence

6. The launch carriage assembly is moved into place under the set of launch cradles and jacked up, thereby lifting the vessel (Figure 7). The vessel is then moved from the construction hall to the transverser, moved laterally on the transverser until the vessel carriage assembly is lined up with the rails leading to the launch platform, and moved onto the launch platform (Figure 8). The launch basin is flooded to the level where the launch platform and vessel will float from the shallow ledge of the launch basin to the deep basin. The water is then pumped from the basin, allowing the launch platform and vessel to rest on the bottom. Finally, the basin and the launch platform are flooded, allowing the submarine to float free from the cradles. The launch platform is later refloated and returned to the shallow ledge.

(Continued p. 9)

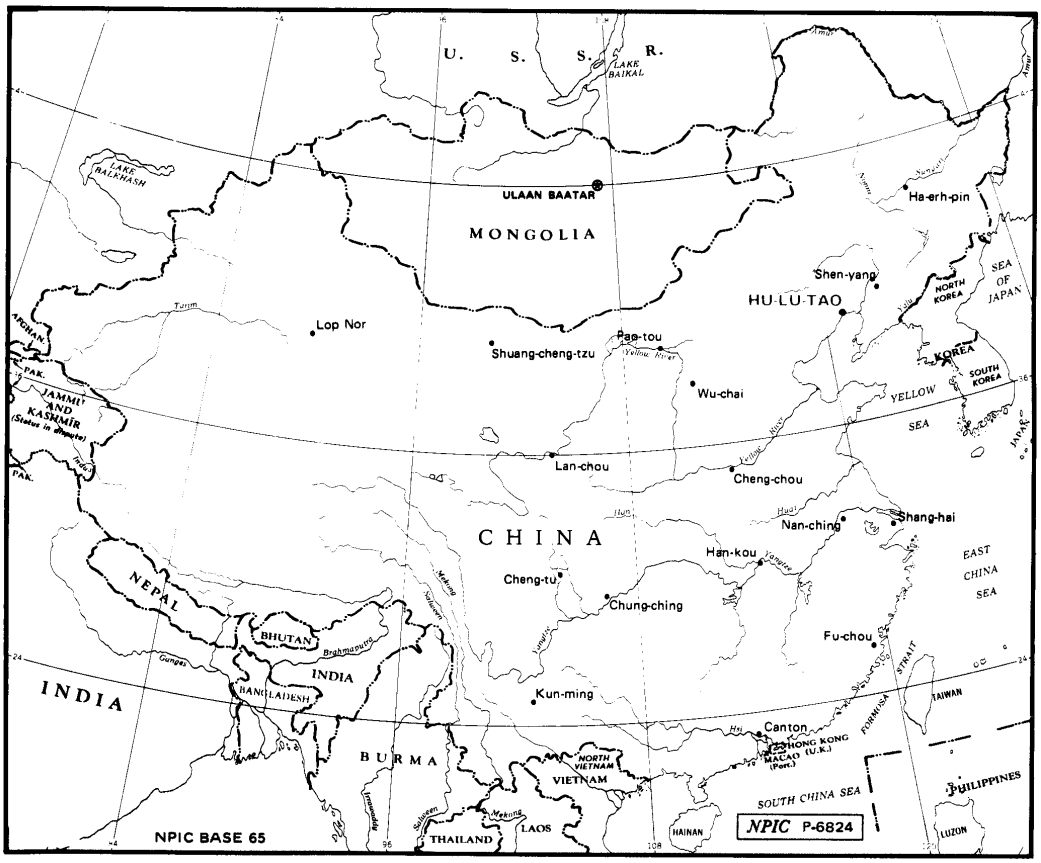

FIGURE 1. LOCATION OF HU-LU-TAO NAVAL BASE, SHIPYARD, AND PORT FACILITY, CHINA

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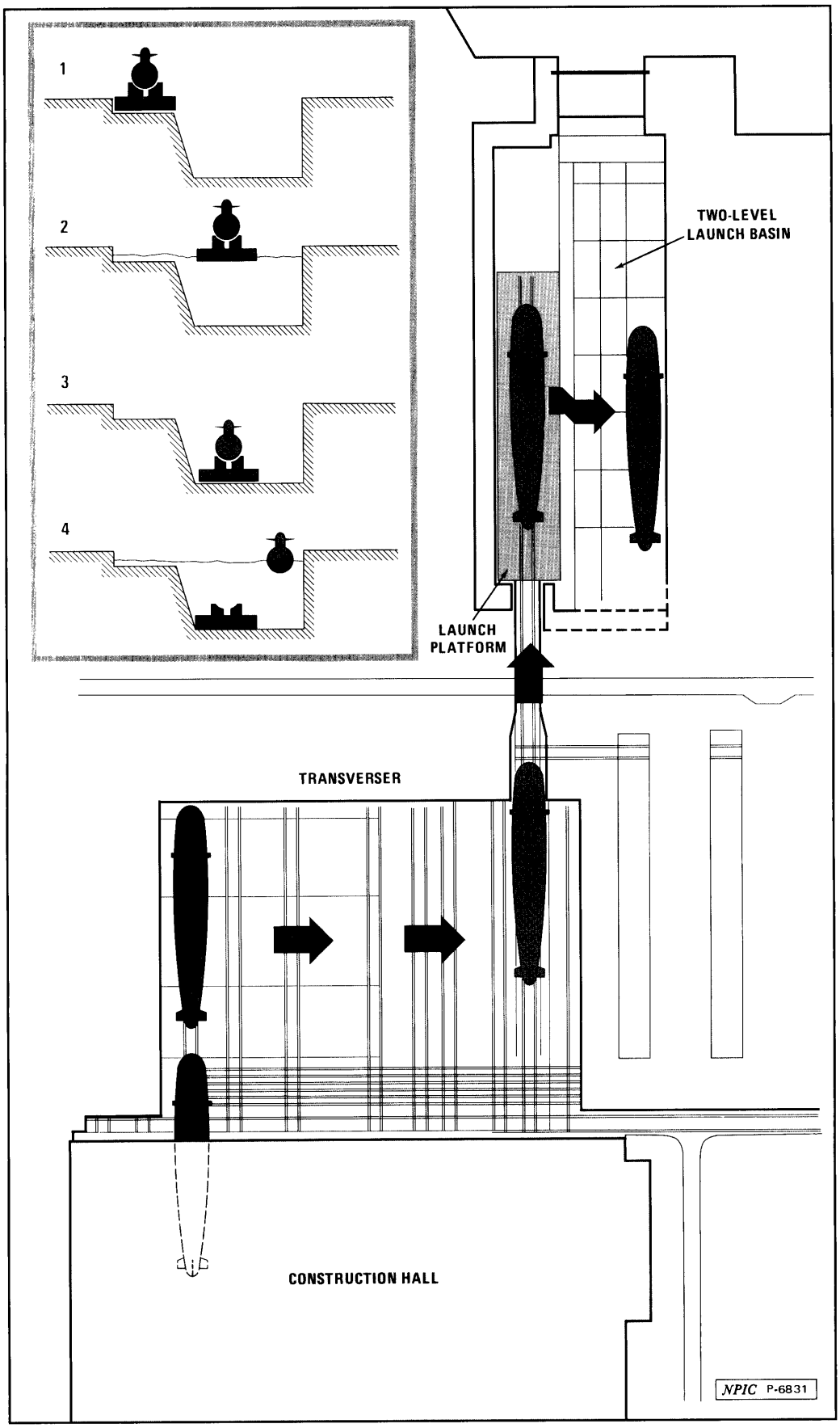

FIGURE 8. LAUNCHING PROCEDURE

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Jigs

7. For the purpose of this report "jigs" are defined as adjustable, U-shaped, cradle-like devices used to facilitate the fabrication of submarines. The length of the jigs is variable and may be adjusted either longer or shorter, depending on the specific needs. They may have parallel or curved sides, determined by the submarine section being fabricated--for example, bow, stern, or midsection shapes (Figures 9 and 10).

8. The precise function or use of the jigs is unknown. However, it is suspected that they are used to fabricate and shape large pieces of outer hull plate or to join approximately three-quarters of the outer hull to a pressure hull section, or both of the preceding. They could also aid in the movement and alignment of subassemblies.

9. The width and shape of the jigs and the width and shape of the submarine under construction are similar. The largest jig observed at Hu-lu-tao Shipyard The beam of the Han SSU

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REFERENCES

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MAPS OR CHARTS

15th RTS. USATC, Series 200, Sheet 0289-24, scale 1:200,000

REQUIREMENT

Project 253049

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